IUCLID

Data Set

Existing Chemical	:	ID: 80-51-3
CAS No.	:	80-51-3
EINECS Name	:	4,4'-oxydi(benzenesulphonohydrazide)
EC No.	:	201-286-1
Molecular Formula	:	C12H14N4O5S2
Producer related part		
Company	:	Epona Associates, LLC
Creation date	:	28.11.2006
Substance related part		
Company	:	Epona Associates, LLC
Creation date	:	28.11.2006
Status	:	
Memo	:	Chemtura Celogen OT
Printing date	:	20.12.2006
Revision date	:	
Date of last update	:	20.12.2006
Number of pages	:	24
Chapter (profile)	:	Chapter: 1, 2, 3, 4, 5, 6, 7, 8, 10
Reliability (profile)	:	Reliability: without reliability, 1, 2, 3, 4
Flags (profile)	:	Flags: without flag, confidential, non confidential, WGK (DE), TA-Luft (DE), Material Safety Dataset, Risk Assessment, Directive 67/548/EEC, SIDS

1. General Information

Id 80-51-3
Date 20.12.2006

1.0.1 APPLICANT AND COMPANY INFORMATION

Type	:	cooperating company
Name	:	Chemtura Corporation
Contact person	:	
Date	:	
Street	:	
Town	:	
Country	:	
Phone	:	
Telefax	:	
Telex	:	
Cedex	:	
Email	:	
Homepage	:	

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1.0.2 LOCATION OF PRODUCTION SITE, IMPORTER OR FORMULATOR

1.0.3 IDENTITY OF RECIPIENTS

1.0.4 DETAILS ON CATEGORY/TEMPLATE

1.1.0 SUBSTANCE IDENTIFICATION

1.1.1 GENERAL SUBSTANCE INFORMATION

Purity type	:	typical for marketed substance
Substance type	:	organic
Physical status	:	solid
Purity	:	>= 93 % w/w
Colour	:	white
Odour	:	

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1.1.2 SPECTRA

1.2 SYNONYMS AND TRADENAMES

1.3 IMPURITIES

1.4 ADDITIVES

1.5 TOTAL QUANTITY

1.6.1 LABELLING

1.6.2 CLASSIFICATION

1.6.3 PACKAGING

1.7 USE PATTERN

1.7.1 DETAILED USE PATTERN

1.7.2 METHODS OF MANUFACTURE

1.8 REGULATORY MEASURES

1.8.1 OCCUPATIONAL EXPOSURE LIMIT VALUES

1.8.2 ACCEPTABLE RESIDUES LEVELS

1.8.3 WATER POLLUTION

1.8.4 MAJOR ACCIDENT HAZARDS

1.8.5 AIR POLLUTION

1.8.6 LISTINGS E.G. CHEMICAL INVENTORIES

1.9.1 DEGRADATION/TRANSFORMATION PRODUCTS

1.9.2 COMPONENTS

1.10 SOURCE OF EXPOSURE

1.11 ADDITIONAL REMARKS

1.12 LAST LITERATURE SEARCH

1.13 REVIEWS

2.1 MELTING POINT

2.2 BOILING POINT

2.3 DENSITY

2.3.1 GRANULOMETRY

2.4 VAPOUR PRESSURE

2.5 PARTITION COEFFICIENT

2.6.1 SOLUBILITY IN DIFFERENT MEDIA

Solubility in	:	Water
Value	:	= .10996 mg/l at 20 °C
pH value	:	= 6
concentration	:	at °C
Temperature effects	:	
Examine different pol.	:	
pKa	:	at 25 °C
Description	:	
Stable	:	
Deg. product	:	
Method	:	OECD Guide-line 105
Year	:	2006
GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4

Method : A preliminary test on the solubility of the test item indicated that the water solubility was more than 10E-2 g/L. This necessitated conduction of the water solubility test (main test) employing the flask method.

Result : The results showed that the saturation of the test item in the water was achieved on day one:

Conc of test item (ug/l)	Day of analysis
109.23 +/- 8.08	1
108.53 +/- 3.94	2
112.13 +/- 5.79	3

The successive analyzed values showed a per cent difference in mean water solubility on different days in the range of 0.6 to 3.3%. This variation (% difference in mean water solubility on different days) was lower than the maximum allowed difference of 15%, per OECD Guideline 105). These parameters clearly demonstrate the validity of the test conducted. The overall mean value for water solubility of the test item in water was 109.96 ug/mL at 20 deg C. The pH of the samples of days 1, 2, and 3 was 6.0.

Test substance : Purity >= 93%

Reliability : (1) valid without restriction
Guideline study

Flag : Critical study for SIDS endpoint

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2.6.2 SURFACE TENSION

2.7 FLASH POINT

2.8 AUTO FLAMMABILITY

2.9 FLAMMABILITY

2.10 EXPLOSIVE PROPERTIES

2.11 OXIDIZING PROPERTIES

2.12 DISSOCIATION CONSTANT

2.13 VISCOSITY

2.14 ADDITIONAL REMARKS

3.1.1 PHOTODEGRADATION

3.1.2 STABILITY IN WATER

3.1.3 STABILITY IN SOIL

3.2.1 MONITORING DATA

3.2.2 FIELD STUDIES

3.3.1 TRANSPORT BETWEEN ENVIRONMENTAL COMPARTMENTS

Type	:	fugacity model level III
Media	:	
Air	:	% (Fugacity Model Level I)
Water	:	% (Fugacity Model Level I)
Soil	:	% (Fugacity Model Level I)
Biota	:	% (Fugacity Model Level II/III)
Soil	:	% (Fugacity Model Level II/III)
Method	:	other: modeling
Year	:	2006
Method	:	Level III Fugacity Model :

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Chem Name : Benzenesulfonic acid, 4,4'-oxybis-, dihydrazide
Molecular Wt: 358.39
Henry's LC : 1.26e-017 atm-m3/mole (Henrywin program)
Vapor Press : 6.67e-012 mm Hg (Mpbpwin program)
Liquid VP : 8.31e-010 mm Hg (super-cooled)
Melting Pt : 237 deg C (Mpbpwin program)
Log Kow : 0.08 (Kowwin program)
Soil Koc : 0.493 (calc by model)

Result : Level III Fugacity Model (Full-Output):

==========

	Mass Amount (percent)	Half-Life (hr)	Emissions (kg/hr)
Air	2.35e-007	122	1000
Water	49.1	900	1000
Soil	50.8	900	1000
Sediment	0.0916	3.6e+003	0

	Fugacity (atm)	Reaction (kg/hr)	Advection (kg/hr)	Reaction (%)	Advection (%)
Air	3.52e-021	3.17e-005	5.59e-005	1.06e-006	1.86e-006
Water	2.05e-022	900	1.17e+003	30	39
Soil	7.57e-021	931	0	31	0
Sediment	1.89e-022	0.42	0.0436	0.014	0.00145

Persistence Time: 793 hr
Reaction Time: 1.3e+003 hr

Advection Time: 2.04e+003 hr
Percent Reacted: 61
Percent Advected: 39

Half-Lives (hr), (based upon Biowin (Ultimate) and Aopwin):
Air: 122
Water: 900
Soil: 900
Sediment: 3600
Biowin estimate: 2.349 (weeks-months)

Advection Times (hr):
Air: 100
Water: 1000
Sediment: 5e+004

Reliability : (2) valid with restrictions
Modeled data

Flag : Critical study for SIDS endpoint
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3.3.2 DISTRIBUTION

3.4 MODE OF DEGRADATION IN ACTUAL USE

3.5 BIODEGRADATION

Type	:	aerobic
Inoculum	:	predominantly domestic sewage
Concentration	:	33.33 mg/l related to Test substance related to
Contact time	:	29 day(s)
Degradation	:	19.14 (±) % after 29 day(s)
Result	:	other: not readily biodegradable
Kinetic of testsubst.	:	9 day(s) 8.57 % 14 day(s) 12.78 % 22 day(s) 16.02 % % %
Control substance	:	Acetic acid, sodium salt
Kinetic	:	29 day(s) 94.78 % %
Deg. product	:	no
Method	:	OECD Guide-line 301 B "Ready Biodegradability: Modified Sturm Test (CO2 evolution)"
Year	:	2006
GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	The test item was tested at a concentration of 33.33 mg/L in mineral medium (= 13.41 mg TOC), along with inoculum controls, toxicity control and positive control. The CO2 released was measured on day 3, 6, 9, 14, 17, 22 and 27.
Result	:	The precent degradation of the toxicity control was 44.33.
Test substance	:	Purity >= 93%
Reliability	:	(1) valid without restriction Guideline study
Flag	:	Critical study for SIDS endpoint

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3.6 BOD5, COD OR BOD5/COD RATIO

3.7 BIOACCUMULATION

3.8 ADDITIONAL REMARKS

4.1 ACUTE/PROLONGED TOXICITY TO FISH

Type	:	semistatic
Species	:	Cyprinus carpio (Fish, fresh water)
Exposure period	:	96 hour(s)
Unit	:	mg/l
NOEC	:	.82
LC50	:	4.58
LOEC	:	1.54
Limit test	:	no
Analytical monitoring	:	yes
Method	:	OECD Guide-line 203 "Fish, Acute Toxicity Test"
Year	:	2006
GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Groups of fish were exposed to concentrations of 2, 4, 8, 16 and 32 mg/L for 96 hours. Negative and positive controls were also tested.
Result	:	Measured concentrations were .82, 1.54, 3.34, 6.35 and 12.89 mg/L; the percent mortalities at the end of the test were 0, 10, 30, 60 and 100, respectively.
Test substance	:	Purity >= 93%
Reliability	:	(1) valid without restriction Guideline study
Flag	:	Critical study for SIDS endpoint

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4.2 ACUTE TOXICITY TO AQUATIC INVERTEBRATES

Type	:	static
Species	:	Daphnia magna (Crustacea)
Exposure period	:	48 hour(s)
Unit	:	mg/l
NOEC	:	4
EC50	:	11.1
LOEC	:	6.4
Limit Test	:	no
Analytical monitoring	:	no
Method	:	OECD Guide-line 202
Year	:	2006
GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	The Daphnia, less than 24 hours old, were exposed to concentrations of 4, 6.4, 10.24, 16.38 and 26.21 mg/L along with negative, vehicle, and positive controls. The number of Daphnia immobilized at 24 and 48 hours was recorded.
Result	:	At 24 hours the percent immobilization was 0, 0, 15, 40, and 60 (respective to the test item concentrations). At 48 hours the values for percent immobilization were 0, 25, 40, 65, and 100.
Test substance	:	Purity >= 93%
Reliability	:	(1) valid without restriction Guideline study
Flag	:	Critical study for SIDS endpoint

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4.3 TOXICITY TO AQUATIC PLANTS E.G. ALGAE

Species	:	Scenedesmus subspicatus (Algae)
Endpoint	:	biomass
Exposure period	:	72 hour(s)
Unit	:	mg/l
NOEC	:	.1
LOEC	:	.35
EC50	:	.67
Limit test	:	no
Analytical monitoring	:	no
Method	:	OECD Guide-line 201 "Algae, Growth Inhibition Test"
Year	:	2006
GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	The test item was tested at concentrations of .1, ,35, 1.23, 4.29 and 15.01 mg/L along with a negative control, a vehicle control and a positive control. The cell growth was measured at 24, 48, and 72 hours after intiation of the test.
Result	:	The 72 hour values were: EbC50 = 0.67 mg/L ErC50 = 2.34 mg/L NOEC = .1 mg/L LOEC = .35 mg/L
Test substance	:	Purity >= 93%
Reliability	:	(1) valid without restriction Guideline study
Flag	:	Critical study for SIDS endpoint

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4.4 TOXICITY TO MICROORGANISMS E.G. BACTERIA

4.5.1 CHRONIC TOXICITY TO FISH

4.5.2 CHRONIC TOXICITY TO AQUATIC INVERTEBRATES

4.6.1 TOXICITY TO SEDIMENT DWELLING ORGANISMS

4.6.2 TOXICITY TO TERRESTRIAL PLANTS

4.6.3 TOXICITY TO SOIL DWELLING ORGANISMS

4.6.4 TOX. TO OTHER NON MAMM. TERR. SPECIES

4.7 BIOLOGICAL EFFECTS MONITORING

4.8 BIOTRANSFORMATION AND KINETICS

4.9 ADDITIONAL REMARKS

5.0 TOXICOKINETICS, METABOLISM AND DISTRIBUTION

5.1.1 ACUTE ORAL TOXICITY

5.1.2 ACUTE INHALATION TOXICITY

5.1.3 ACUTE DERMAL TOXICITY

5.1.4 ACUTE TOXICITY, OTHER ROUTES

5.2.1 SKIN IRRITATION

5.2.2 EYE IRRITATION

5.3 SENSITIZATION

5.4 REPEATED DOSE TOXICITY

Type	:	Sub-acute
Species	:	rat
Sex	:	male/female
Strain	:	Wistar
Route of admin.	:	oral feed
Exposure period	:	Males:two weeks prior to mating, during the mating period and approximately two weeks post mating; Females: Two weeks prior to mating up to PND 4
Frequency of treatm.	:	daily
Post exposure period	:	control and high dose recovery groups
Doses	:	100, 500 and 1500 ppm
Control group	:	yes, concurrent no treatment
NOAEL	:	500 ppm
Method	:	other: OECD TG 422
Year	:	2006
GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4

Method : The test item was mixed in the experimental food at the concentrations of 100, 500 and 1500 ppm and fed to three groups of rats i.e., low (G2), mid (G3) and high dose (G4)/high dose recovery (G4R) groups, respectively. Concurrent control group (G1) and a control recovery group (G1R) of rats received experimental food without the test item. The main groups i.e., G1 to G4 consisted of 10 male and 10 female rats per group and recovery groups consisted of 5 male and 5 female rats per group. The prepared experimental food was provided to specific groups of rats prior to mating, during the mating period and during post mating period (for males), during pregnancy and up to lactation day 4

(for females). In the control recovery and high dose recovery groups the treatment period was followed by a 14 day no treatment (recovery) period. The recovery period of the study was started from the day of sacrifice of the first litters.

The stability of the test item at 100 and 10000 ppm concentrations in the experimental food was confirmed before the start of treatment. The active ingredient concentration of the test item in the experimental food was determined two times i.e., on treatment day 1 and during 2nd month of the treatment period.

Animals from all the groups were observed for clinical signs, physical abnormalities, changes in body weight, food consumption and survival. The clinical observation was done once before first exposure and at least once a week thereafter for all the animals. The functional observation battery was done shortly before sacrifice for 5 males and 5 females randomly selected from each group. For recovery groups functional observation battery was done along with main groups males. Laboratory investigations such as haematology and clinical chemistry were performed for 5 males and 5 females randomly selected from each group at the end of the premating period and recovery period. The animals were subjected to detailed necropsy at sacrifice. Histopathological examination of all the tissues from the randomly selected 5 males and 5 females from control and high dose groups, liver from 5 randomly selected females of low, mid and recovery groups was carried out. The data were statistically analysed.

Result : There were no treatment related clinical signs at any of the doses tested. The neurological examination (functional observation battery) did not reveal any treatment-related findings. The parturition performance in females of the main groups was unaffected by the treatment and there were no signs of dystocia. There were no pre-terminal deaths.

Significant decreases in the weekly weights attributed to treatment were observed in the high dose and high dose recovery group males throughout the treatment period and remained lower in the high dose recovery group during the recovery period. The cagewise average food intake (g/rat/day) was significantly lower in the high dose and high dose recovery group in both sexes during treatment period. During the recovery period, the food intake became normal in males and significantly higher in females of the high dose recovery group, indicative of reversibility when compared to concurrent control group. The body weights and food intake were unaffected by the treatment at the low and mid doses.

Haematological investigation revealed no treatment related changes in any of the tested doses in both sexes.

There were no treatment related changes observed in clinical chemistry parameters in both sexes.

The maternal body weights and food intake were significantly lower both during gestation and lactation period at the high dose. The maternal body weights and food intake during different intervals of gestation and lactation periods were unaffected by the treatment at the low and mid doses. There were no treatment related effects on gestation length in the treated groups when compared to the control group.

The significant decrease in the terminal fasting body weights in the males at the mid and high doses, and females at the high dose were considered treatment related.
There were no treatment related changes in the organ weights and organ

weight ratios except for a significantly higher weight of the livers in the high dose females when compared to the control. Since the change in the weight
in the high dose recovery females was not treatment related, this could be considered reversible.

There were no treatment related gross changes. There were no treatment related histopathological changes except for higher incidence of glycogen infiltration in the liver in the high dose females. The lesion in the liver was considered reversible as there was no glycogen infiltration
in the high dose recovery females.

In the light of the results described, since there were no changes of clear toxicological significance noted among animals that received a dietary concentration of 500 ppm, this level is considered to be No Observed Adverse Effect Level (NOAEL) of 4,4'-oxybis(benzenesulfonylhydrazide) in Wistar rats which is equivalent to 35.1 and 41.4 mg/kg bw/day for male and female rats, respectively.

Test substance : Purity >= 93%
Reliability : (1) valid without restriction
Guideline study
Flag : Critical study for SIDS endpoint
18.12.2006

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5.5 GENETIC TOXICITY 'IN VITRO'

Type : Bacterial reverse mutation assay
System of testing : S. typhimurium TA98, TA100, TA1535, TA1537; E coli WP2uvrA (pKM101)
Test concentration : 100, 266, 707, 1880, and 5000 ug/plate
Cycotoxic concentr. : > 5000 ug/plate
Metabolic activation : with and without
Result : positive
Method : OECD Guide-line 471
Year : 2006
GLP : yes
Test substance : as prescribed by 1.1 - 1.4

Method : Tested in triplicate. Solvent and positive controls were included.
Result : There was a doubling of the mean number of revertants for TA100 and WP2uvrA (pKM101) and there was a 3X increase for TA1535, both in the presence and absence of metabolic actviation. There was a statistically significant increase in the mean number of revertants in the positive controls.
Test substance : Purity >= 93%
Reliability : (1) valid without restriction
Guideline study
Flag : Critical study for SIDS endpoint
18.12.2006

(2)

Type : Cytogenetic assay
System of testing : Chinese Hamster Ovary cells
Test concentration : 460, 1518 and 5000 ug/ml (with activation); 70 - 1200 ug/ml (without activation)
Cycotoxic concentr. : 5000 ug/ml
Metabolic activation : with and without
Result : negative
Method : OECD Guide-line 473
Year : 2006

GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Two independent trials (each having 2 experiments, one each with and without metabolic activation) were conducted. In Trial 1 and 2, the concentrations were 460, 1518 and 5000 ug/ml in the presence of metabolic activation. In Trial 1, in the absence of metabolic activation, the concentrations were 300, 600 and 1200 ug/ml for 3 hours. In Trial 2, in the absence of metabolic activation the concentrations were 70, 140 and 280 ug/ml for 19 hours and 30 minutes. Concurrent solvent and positive controls were included.
Result	:	There was no evidence of induction of chromosome aberrations in any of the Trials with the test item. The respective positive control items produced large and statistically significant increases in aberrant metaphases. In both Trials, at the highest concentration tested, the reduction of cell growth was in range of 53.42 to 55.16% over the solvent control, both in the presence and absence of metabolic activation.
Test substance	:	Purity >= 93%
Reliability	:	(1) valid without restriction Guideline study
Flag	:	Critical study for SIDS endpoint

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5.6 GENETIC TOXICITY 'IN VIVO'

5.7 CARCINOGENICITY

5.8.1 TOXICITY TO FERTILITY

Type	:	One generation study
Species	:	rat
Sex	:	male/female
Strain	:	Wistar
Route of admin.	:	oral feed
Exposure period	:	Males:two weeks prior to mating, during the mating period and approximately two weeks post mating; Females: Two weeks prior to mating up to PND 4
Frequency of treatm.	:	daily
Premating exposure period		
Male	:	two weeks
Female	:	two weeks
Duration of test	:	see Exposure Period
No. of generation studies	:	1
Doses	:	100, 500 and 1500 ppm
Control group	:	yes, concurrent no treatment
NOAEL parental	:	500 ppm
NOAEL F1 offspring	:	500 ppm
Result	:	no effects at 500 ppm
Method	:	OECD Guide-line 422
Year	:	2006
GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4

Method : The test item was mixed in the experimental food at the concentrations of 100, 500 and 1500 ppm and fed to three groups of rats i.e., low (G2), mid (G3) and high dose (G4)/high dose recovery (G4R) groups, respectively. Concurrent control group (G1) and a control recovery group (G1R) of rats received experimental food without the test item. The main groups i.e., G1 to G4 consisted of 10 male and 10 female rats per group and recovery groups consisted of 5 male and 5 female rats per group. See Section 5.4 for additional details.

Result : See Section 5.4 for additional details.

The parturition performance in females of the main groups was unaffected by the treatment and there were no signs of dystocia. There were no pre-terminal deaths.

The maternal body weights and food intake were significantly lower both during gestation and lactation periods at the high dose. The maternal body weights and food intake during different intervals of gestation and lactation periods were unaffected by the treatment at the low and mid doses. There were no treatment related effects on gestation length in the treated groups when compared to the control group.

At the high dose, the treatment resulted in slightly lower mean litter size which may be due to the lower mean number of corpora lutea and implantations. The test item at the doses tested had no significant effects on the number of pregnancies, number littered, number of live litters, number of pups dead at first observation, and number of pups alive on day 0 at all of the doses tested.

At the high dose, the mean number of female pups and the mean number of pups for combined sex on lactation day 4 and the mean weight of female pups on lactation day 1 were significantly lower when compared to control. The mean number and weight of male and female pups and for the combined sex were unaffected by the treatment at the low and mid doses when compared to control.

At the high dose, the mean litter size, mean viable litter size and day 4 survival index were significantly lower when compared to control. The number of live litters, sex ratio at birth, number of pups dead at birth, number of pups dead/cannibalised on day 1, up to day 4, the number of pups alive on day 0 and 1, live birth index and 24 hour survival index were unaffected by the treatment at all the doses tested when compared to control.

At the high dose, the treatment resulted in lower mean number of corpora lutea and implantations which in turn resulted in lower mean litter size (statistically not significant). Fertility indices were unaffected by the treatment at the low and mid doses.

In the light of the results described, since there were no changes of clear toxicological significance noted among animals that received a dietary concentration of 500 ppm, this level is considered to be No Observed Adverse Effect Level (NOAEL) of 4,4'-oxybis(benzenesulfonylhydrazide) in Wistar rats which is equivalent to 35.1 and 41.4 mg/kg bw/day for male and female rats, respectively.

Test substance : Purity >= 93%

Reliability : (1) valid without restriction

Guideline study

Flag : Critical study for SIDS endpoint
18.12.2006 (8)

5.8.2 DEVELOPMENTAL TOXICITY/TERATOGENICITY

Species	:	rat
Sex	:	male/female
Strain	:	Wistar
Route of admin.	:	oral feed
Exposure period	:	Males:two weeks prior to mating, during the mating period and approximately two weeks post mating; Females: Two weeks prior to mating up to PND 4
Frequency of treatm.	:	daily
Duration of test	:	See Exposure Period
Doses	:	100, 500 and 1500 ppm
Control group	:	yes, concurrent no treatment
NOAEL maternal tox.	:	500 ppm
NOAEL teratogen.	:	500 - ppm
Result	:	no effects at 500 ppm
Method	:	other: OECD TG 422
Year	:	2006
GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4

Method : The test item was mixed in the experimental food at the concentrations of 100, 500 and 1500 ppm and fed to three groups of rats i.e., low (G2), mid (G3) and high dose (G4)/high dose recovery (G4R) groups, respectively. Concurrent control group (G1) and a control recovery group (G1R) of rats received experimental food without the test item. The main groups i.e., G1 to G4 consisted of 10 male and 10 female rats per group and recovery groups consisted of 5 male and 5 female rats per group. See Section 5.4 for additional details.

Result : See Section 5.4 for additional details.

The maternal body weights and food intake were significantly lower both during gestation and lactation periods at the high dose. The maternal body weights and food intake during different intervals of gestation and lactation periods were unaffected by the treatment at the low and mid doses.

At the high dose, the treatment resulted in slightly lower mean litter size which may be due to lower mean number of corpora lutea and implantations. The test item at the doses tested had no significant effects on the number of pregnancies, number littered, number of live litters, number of pups dead at first observation, number of pups alive on day 0 and observation for external abnormalities of live and dead pups at all of the doses tested.

At the high dose, the mean number of female pups and the mean number of pups for combined sex on lactation day 4 and the mean weight of female pups on lactation day 1 were significantly lower when compared to control. The mean number and weight of male and female pups and for the combined sex were unaffected by the treatment at the low and mid doses when compared to control.

At the high dose, the mean litter size, mean viable litter size and day 4 survival index were significantly lower when

compared to control. The number of live litters, sex ratio at birth, the number of pups dead at birth, the number of pups dead/cannibalised on day 1, up to day 4, the number of pups alive on day 0 and 1, live birth index and 24 hour survival index were unaffected by the treatment at all the doses tested when compared to control.

At the high dose, the treatment resulted in lower mean number of corpora lutea and implantations which in turn resulted in lower mean litter size (statistically not significant). Fertility indices were unaffected by the treatment at the low and mid doses.

In the light of the results described, since there were no changes of clear toxicological significance noted among animals that received a dietary concentration of 500 ppm, this level is considered to be No Observed Adverse Effect Level (NOAEL) of 4,4'-oxybis(benzenesulfonylhydrazide) in Wistar rats which is equivalent to 35.1 and 41.4 mg/kg bw/day for male and female rats, respectively.

Test substance : Purity >= 93%
Reliability : (1) valid without restriction
Guideline study
Flag : Critical study for SIDS endpoint
18.12.2006

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5.8.3 TOXICITY TO REPRODUCTION, OTHER STUDIES

5.9 SPECIFIC INVESTIGATIONS

5.10 EXPOSURE EXPERIENCE

5.11 ADDITIONAL REMARKS

6.1 ANALYTICAL METHODS

6.2 DETECTION AND IDENTIFICATION

7.1 FUNCTION

7.2 EFFECTS ON ORGANISMS TO BE CONTROLLED

7.3 ORGANISMS TO BE PROTECTED

7.4 USER

7.5 RESISTANCE

8.1 METHODS HANDLING AND STORING

8.2 FIRE GUIDANCE

8.3 EMERGENCY MEASURES

8.4 POSSIB. OF RENDERING SUBST. HARMLESS

8.5 WASTE MANAGEMENT

8.6 SIDE-EFFECTS DETECTION

8.7 SUBSTANCE REGISTERED AS DANGEROUS FOR GROUND WATER

8.8 REACTIVITY TOWARDS CONTAINER MATERIAL

(1) Advinus Therapeutic Private Limited (2006) Alga Growth Inhibition Test with 4,4'-Oxybis (benzenesulfonylhydrazide) (CAS RN 80-51-3)

(2) Advinus Therapeutic Private Limited (2006) Bacterial Reverse Mutation Test with 4,4'-Oxybis (benzenesulfonylhydrazide) (CAS RN 80-51-3)

(3) Advinus Therapeutic Private Limited (2006) Daphnia Magna, Acute Immobilization Test with 4,4'-Oxybis (benzenesulfonylhydrazide) (CAS RN 80-51-3)

(4) Advinus Therapeutic Private Limited (2006) Fish, Acute Toxicity Test with 4,4'-Oxybis (benzenesulfonylhydrazide) (CAS RN 80-51-3)

(5) Advinus Therapeutic Private Limited (2006) In vitro Chromosome Aberration Test with 4,4'-Oxybis (benzenesulfonylhydrazide) (CAS RN 80-51-3)

(6) Advinus Therapeutic Private Limited (2006) Ready Biodegradability Test with 4,4'-Oxybis (benzenesulfonylhydrazide) (CAS RN 80-51-3)

(7) Advinus Therapeutics Private Limited (2006) Water Solubility of 4,4'-Oxybis(benzenesulfonylhydrazide). (CAS RN 80-51-3)

(8) Advinus Therpaeutics Private Limited (2006) COMBINED REPEATED DOSE TOXICITY STUDY WITH THE REPRODUCTION/DEVELOPMENTAL TOXICITY SCREENING TEST WITH 4,4'-OXYBIS(BENZENESULFONYLHYDRAZIDE) IN WISTAR RATS

(9) Epiwin v.3.11

10.1 END POINT SUMMARY

10.2 HAZARD SUMMARY

10.3 RISK ASSESSMENT